

Abstract

In this talk, I will introduce two types of inverse problems of Birkhoff billiard systems. One is about the spectral rigidity of billiard tables.

I will present a result on how to recover the eigenvalues of the linearization of the Poincare return map on Aubry-Mather periodic orbits from the marked length spectrum of generic Birkhoff billiard tables. The other is about the integrability of Birkhoff Billiards.

The famous Birkhoff conjecture claims that all the integrable billiard systems are those induced by ellipses.

I will review recent progresses in the study of Birkhoff conjecture.

This work is based on joint works with Vadim Kaloshin and Alfonso Sorrentino.